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grouping of the subjects was so arranged that the material for each subject was in proper condition when it came before the class. Some of the weekly guides accompanied the paper, for examination.

Discussions were presented by Professors H. W. Conn, Marcella O'Grady, E. S. Morse and C. S. Minot, and the additional fact was brought out that a good synoptic collection was a desirable feature of the laboratory equipment, in order that the pupil might not have too narrow a view of each group of organisms, such as he is likely to carry away from the study of a single type.

After passing a vote of thanks to the authorities of the University, the citizens of Baltimore and the University Club for the hospitality extended to it, the Society adjourned.

The annual dinner of the affiliated Societies took place at 'The Stafford' at 7:30 on Friday evening. No set toasts were given, but informal speeches formed a very pleasurable close to this reunion.

W. A. SETCHELL, *Secretary*.

YALE UNIVERSITY.

#### THE PRINCETON MEETING OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION.

THE third annual meeting of *The American Psychological Association* was held at Princeton College on Thursday and Friday, December 27th and 28th, under the presidency of Professor William James, of Harvard University. Psychology is the youngest and likewise one of the most vigorous of the sciences. Although the Association is small, consisting of those only who are actively engaged in psychological investigation, and the members are widely scattered, there were sixteen papers read, exclusive of those presented in the absence of their authors. Indeed, the only drawback to the pleasure of the meeting was the fact that the program was so crowded that there was not sufficient time for discussion and

social intercourse. The short intervals between the meetings were, however, pleasantly filled, owing to the hospitality of President Patton and Professor Baldwin, and the excellent accommodations of the Princeton Inn.

The Association was welcomed to Princeton by President Patton in a fitting address in which he alluded to the importance of such meetings, not only for the advancement of science, but also for the cultivation of inter-university friendliness, to the death and life-work of President McCosh, and to the prominent place always given to philosophy and psychology at Princeton.

The papers presented covered a wide range of psychological topics. Experimental psychology proper was not so fully represented as in the Philadelphia and New York meetings, owing to the detention of several members, but all the communications were strictly scientific in method.

The first paper, *Minor Studies and Apparatus*, by Professor Sanford, was, indeed, of purely experimental character, coming from Clark University, where President Hall has given such a prominent place to experimental psychology. Professor Sanford first showed charts demonstrating that the retinal fields for color are relatively smaller in the case of children than in the case of adults. In the second study he reported experiments on the accuracy with which an observer can distinguish by different senses which of two stimuli is first presented. A flash of light is perceived relatively earlier than a sound—contrary to results formerly published by Exner. In a third study primary memory was investigated. In a fourth study questions were asked students concerning the confusion of related ideas, for example:—How do you distinguish your right from your left hand? How do you call up a forgotten name? How do you collect the attention? What were your favorite games when a child? What is the earliest

thing you can remember and how old were you? The distinction between motor and sensory types and other psychological questions were discussed in connection with the answers, and the method of securing mental statistics by asking questions was criticized. In conclusion, an instrument was shown for presenting objects alternately to each eye, and charts and photographs illustrating illusions of size, Listing's Law and the Horopter. These studies will be published in the forthcoming number of the *American Journal of Psychology*.

Professor Ormond, Professor Baldwin and others took part in the discussion that followed the reading of the paper. The discussion of the different papers was of nearly as great interest as the papers themselves, but to report it would carry us too far into details.

The second paper was on *The Psychic Development of Young Animals and its Physical Correlation*, by Professor T. Wesley Mills, of McGill University. The speaker emphasized the importance of comparative and genetic psychology—that is the study of the mental life of the lower animals and of children. He had observed the dog, cat, rabbit, guinea-pig and birds. They were watched from their birth, and notes were made several times during the day. The method was emphasized rather than the results, which will be published later.

Following Professor Mills' paper was one *On the Distribution of Exceptional Ability*, by Professor Cattell. The speaker explained how he had selected the 1,000 most eminent men by an objective method, and how this enabled him to measure and express numerically their mental traits. Curves were shown giving the time and racial distribution of great men. These demonstrate the rise and fall of leading tendencies in the past, and enable us, to a certain extent, to predict the course of civilization in the future.

Dr. A. Macdonald, of the Bureau of Education, presented a report on *Sensitiveness to Pain*. He exhibited the instrument used and described his method for measuring sensitiveness to pain. Women are more sensitive than men in the ratio of 7:5. Men taken from the street are not half so sensitive to pain as professional men. Americans are more sensitive than Englishmen or Germans. The right-hand side of the body is less sensitive than the left-hand side. Some instruments for anthropometric tests were also exhibited and described.

At the close of the morning session Brother Chrysostom, of Manhattan College, read a paper on *Freedom of the Will*. This time-honored problem was discussed from the point of view of St. Thomas Aquinas, with due recognition of recent writers. The Catholic Church certainly deserves honor for finding or putting modern science in the works of the great Schoolman.

The afternoon session was opened by the longest and most carefully prepared paper of the meeting, *Consciousness of Identity and So-Called Double Consciousness*, by Professor Ladd, of Yale University. Professor Ladd began by defining identity in material things and in minds. Changes heighten rather than diminish the consciousness of identity. A metaphysical ego is not needed—minds vary in their unity and reality. Double consciousness and hypnotic states should be treated in their relations to normal mental life, as it is not likely that the principle of continuity is violated in this case. Psychical automatism should be carefully studied—a man is not only that of which he is conscious. We can consider our automaton as well as our ego; one or the other may be predominant; they may be in conflict or act in coöperation. The automaton is evident in our daily life—in games, in dreams, in dramatic composition and acting, in prophecy. Ethically considered, a man is usually two or three,

rather than one—hence the categorical imperative of Kant. The sanest minds are at times divided into two or more selves, as much as are the most extreme cases of hypnotic or pathological double-consciousness. Prof. Ladd's paper is included in his forthcoming work on Psychology, in the press of Charles Scribner's Sons. It excited much discussion and some criticism.

The remainder of the session was taken up by a paper on *A Preliminary Report and Observations on a Research into the Psychology of Imitation* by Professor Royce, of Harvard University. He began by noting the difficulty of defining imitation from other mental functions. He then described experiments now in progress in the psychological laboratory of Harvard University. An observer listens to a rhythmic series of taps which are later repeated or imitated by movements. The record was taken on a kymograph, and the impressions of the observers were noted and studied. The objective records have not been collated, but Professor Royce reported the subjective state as described by the observer, and its variations with different rhythms. In further discussion of the subject Professor Royce considered different kinds of imitation, and their relation to the rest of mental life and to the physical organism. The subject of imitation has recently become prominent and is evidently of the utmost importance in social psychology—not only the development of the child but also the thoughts, feelings and actions of men depend largely, if not chiefly, on imitation, and our theoretical knowledge has important practical applications.

The address of the President, Professor James, of Harvard University, occupied the evening session. The subject, *The Unity of Consciousness*, was treated with the speaker's unvarying clearness and literary skill. Professor James once said that metaphysics in a natural science 'spoils two

good things,' but no natural science, be it physics or psychology, can draw a sharp line between its facts and its philosophy. It is also worth noting that what the physicist considers part of his science may be regarded as metaphysics by the psychologist, and conversely. The question of the unity of consciousness is, perhaps, as much a part of scientific psychology as the doctrine of the conservation of energy is a part of the science of physics. Professor James' address was largely made up of a review of the various theories proposed to account for the principle of union in the mind when many objects, susceptible upon occasion of being known separately, are brought together in the mind and known all at once. The Associationists say that the 'ideas' of several objects 'combine.' The Anti-Associationists say that such a process of self-compounding of ideas is incomprehensible, and that they must be combined by a higher synthetic principle, the Soul, the Ego, or what not. The speaker expressed dissatisfaction with the both these views. He said that his own aversion to the doctrine of the 'Soul' rested on an ancient prejudice, of which he could give no fully satisfactory account to himself, and he complimented Professor Ladd, of Yale, for his continued loyalty to this unpopular principle. Even Professor Ladd in his book prefers to speak of 'Soul' by some paraphrase such as 'real spiritual being.' Within the bounds of the psychological professor the 'Soul' is not popular to-day. Professor James conceived his problem as that of how we can 'know things together,' and in the first half of his address he incidentally said a good deal about knowledge. To the popular mind all knowledge involves a sort of mutual presence or absence as regards the object and the mind, which is treated as very mysterious. Professor James expelled this mystery from most cases of knowledge. He found the mystery of presence or ab-

sence, however, to abide in one little fact, from which it cannot be driven, and that is the very smallest pulse of consciousness, which always is consciousness of change. The present moment is no fact of experience; it is only a mathematical postulate, and the minimum real experience gives us a passing moment, in which a going and a coming fact meet on equal terms, and what was is known in one indivisible act with what does not quite yet exist. This is the original type both of our knowing at all and of knowing of things together, according to the speaker. He said there was no use trying to explain it, for it was the fundamental element of all experience. But we might seek to determine the exact conditions that decide what particular objects should be known together, and to this inquiry the end of the address was devoted. Various physiological, psychological and purely spiritual theories of the conditions were reviewed, without the speaker saying which one he favored. He hoped, however, that his remarks might stimulate inquiry which should bear fruit at the meeting next year. He closed with a modification of one of the most important doctrines of his own book on psychology, which in that state of mind, subjectively considered, ought not to be called complex at all. He admitted them to be complex, but is as far as ever from allowing the complexity to be described in the usually accepted way of the Associational school. The address will be printed in full in the March number of *The Psychological Review*.

The morning session of the second day was taken up by five papers on pleasure, pain and the emotions, and in the afternoon when the papers of the program had been read, the discussion returned to this subject and was carried on with much eagerness to the moment of adjournment. The papers were *The Classification of Pleasure and Pain*, By Prof. Charles A. Strong, of the University

of Chicago; *A Theory of Emotions from the Physiological Standpoint*, by Prof. G. H. Mead, of the University of Chicago; *Desire*, by Dr. D. S. Miller, of Bryn Mawr College; *Pleasure and Pain Defined*, by Prof. S. E. Mezes, of the University of Texas; *Pleasure-Pain versus Emotion*, by Mr. H. R. Marshall.

It would not be easy to give an abstract of these papers that would be intelligible to men of science working in other departments—indeed, the most careful attention was demanded of the audience. The kind of psychology presented is a development of descriptive psychology which may be called analytic psychology—a subject best represented in English by Dr. Ward's able but difficult article on *Psychology*, in the *Encyclopædia Britannica*. The question of the emotions and their expression has recently become prominent in psychological discussion—witness the articles on the subject by Professors James, Baldwin and Dewey in the last three numbers of the *Psychological Review*. Professor James' original theory that the mental state is rather the result of the 'expression' than that the expression is caused by the mental state is pretty well made out. The theory, to put the matter most bluntly, says that, "we feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike or tremble, because we are sorry, angry or fearful, as the case may be." Darwin's work, for example, should not be called *The Expression of the Emotions*. The movements are not caused by the emotions, but are aroused reflexly by the object, and are or have been useful. Thus the animal in the presence of its enemy may feign death or run away as will best contribute to its chances of escape, and a man may be 'paralyzed' by fear or flee according to circumstances. A man sneers because his ancestors were preparing to bite. The mental emotion results from

movements and other changes in the body, being largely due to altered blood supply and the like.

Professor Strong's paper treated especially the classification of pains, reviewing the evidence in favor of special nerves for pain and the distinction between pain and distress (the German *Schmerz* and *Unlust*). Mr. Mead emphasized the importance of vaso-motor changes for pleasure and pain, attributing pleasure to increased blood supply and assimilation. Dr. Miller argued that desire is the essence of pleasure, and Mr. Marshall discussed the relations of pain, pleasure and emotion. It is interesting to note how even descriptive and analytic psychology is influenced by a psycho-physical point of view. Professor James aptly concluded the discussion by saying that such papers make us feel that we are in 'the place where psychology is being made.'

At the opening of the fifth and concluding session Professor Newbold read a paper entitled *Notes on the Experimental Production of Illusions and Hallucinations*. He reported that in twenty-two cases out of eighty-six tried, he had produced illusions by causing the patient to gaze into a transparent or reflecting medium, such as water, objects of glass and mirrors. The phantasm usually appeared within five minutes, was preceded by cloudiness, colors or illumination of the medium, and varied from a dim outline to a brilliantly colored picture. These were often drawn from the patient's recent visual experience, but were often unrecognized and sometimes fantastic. Successive images were usually related, if at all, by similarity, but often no relation was discoverable. The image was often destroyed by movements of the medium and by distracting sensory impressions and motor effort. The speaker was not inclined to regard the phantasms of the glass as demonstrating the existence of subconscious visual automa-

tisms, but rather as illusions of the recognized types. But he was not prepared to deny that visual automatism might in some cases exist and be traced in such phantasms.

Mr. Griffing, of Columbia College, described *Experiments on Dermal Pain*. The pressure just causing pain (in kg) was for boys 4.8, for college students 5.1, for law students 7.8, for women 3.6. Experiments were also described giving the relations of area and duration and of velocity and mass for the pain threshold. These latter experiments are of special interest as determining the correlation of quantities followed by a given mental result.

The third paper of the session and last of the meeting was on *Recent Advances in the Chemistry and Physiology of the Retina*, by Mrs. Franklin, of Baltimore, who gave an account of the recent experiments by Professor König on the absorption spectrum of the visual purple of the retina, and of her own experiments which demonstrated that the fovea is color-blind for blue. The recent experiments on vision, largely carried out in the laboratories of Berlin, are of great importance, and make all the older theories of color-vision inadequate. The theory proposed by Mrs. Franklin is undoubtedly more satisfactory than any other, but even her theory meets difficulties in these new facts.

At the business meeting of the Association Professor Cattell (Columbia) was elected President, and Professor Sanford (Clark), Secretary. Several new members were elected and a new constitution was adopted. Under this constitution a council of six members is prescribed, and Professors Ladd (Yale), Cattell (Columbia), James (Harvard), Baldwin (Princeton), Dewey (Chicago), and Fullerton (Pennsylvania) were elected. Probably the most important business before the meeting was the invitation of the American Society of Naturalists offering affiliation. It was de-

decided to meet next year, if possible, at the same time and place as the Naturalists, and the Council was given power to decide the question of a closer affiliation.

J. McKEEN CATTELL,  
Secretary for 1894.

COLUMBIA COLLEGE.

#### CURRENT NOTES ON ANTHROPOLOGY, NEW SERIES—I.

##### THE 'MISSING LINK' FOUND AT LAST.

No publication of late date is likely to excite more interest than a quarto of forty pages which has just been issued from the local press of Batavia, with the title, '*Pithecanthropus Erectus. Eine Menschenähnliche Uebergangsform aus Java.*' Von Eug. Dubois, Militärarzt der Niederland. Armee.'

This noteworthy essay contains the detailed description of three fragments of three skeletons which have been found in the early pleistocene strata of Java, and which introduce to us a new species, which is also a new genus and a new family, of the order of primates, placed between the *Simiidae* and *Hominidae*,—in other words, apparently supplying the 'missing link' between man and the higher apes which has so long and so anxiously been awaited.

The material is sufficient for a close osteological comparison. The cubical capacity of the skull is about two-thirds that of the human average. It is distinctly dolichocephalic, about 70°—and its *norma verticalis* astonishingly like that of the famous Neanderthal skull. The dental apparatus is still of the simian type, but less markedly so than in other apes. The femora are singularly human. They prove beyond doubt that this creature walked constantly on two legs, and when erect was quite equal in height to the average human male. Of the various differences which separate it from the highest apes and the lowest men, it may be said that they bring it closer to the latter than to the former.

One of the bearings of this discovery is upon the original birth-place of the human race. The author believes that the steps in the immediate genealogy of our species were these: *Prothyllobates*: *Anthropopithecus Sivalensis*: *Pithecanthropus erectus*: and *Homo sapiens*. This series takes us to the Indian faunal province and to the southern aspects of the great Himalayan chain, as the region somewhere in which our specific division of the great organic chain first came into being.

##### THE ANALOGIES OF RELIGIOUS SYMBOLISM.

A LEARNED Hungarian lady, Madame Sofie von Torma, has lately published an interesting little work, a prologue to a large one, in which she points out a number of close analogies or even identities between the symbols and myths of primitive peoples. Its title '*Ethnographische Analogieen; ein Beitrag zur Gestaltungs und Entwicklungsgeschichte der Religionen*' (Jena, 1894).

Beginning with the study of local archaeology, she soon found that the analysis of her home relics took her back to ancient Arcadian and Egyptian prototypes, and the question arose, In what way were they related? To this it is her intention to devote an extended research; and in the volume before us, she states with force and brevity the many remarkable similarities she has noted, and presents the inquiries to which they give rise. The text is accompanied with 127 illustrations.

##### ETHNIC AFFILIATIONS OF THE JAPANESE.

AFTER a great deal of rambling discussion as to the ethnic relationship of the Japanese, it is gratifying to find a writer who has touched bottom at last, and brings a satisfactory theory with plenty of good evidence to support it. The writer is Dr. Heinrich Winkler, who, in his little pamphlet, *Japaner und Altaier* (Berlin, 1894), offers a solution of the problem which is certainly bound to stand.